Flowering Rush at the Balmaha Marshes, Loch Lomond

John Mitchell

22 Muirpark Way, Drymen, by Glasgow G63 0DX

Over the years a number of aquatic and marshland plants that are alien to Scotland have established themselves in the wetlands around the south-eastern corner of Loch Lomond (Mitchell, 1993). The assumption is that most have originated from escaped or discarded cultivated stock, having been washed in from the loch by wind-assisted drift or carried downstream by the River Endrick at times of flood. The latest addition to the area's non-indigenous flora is the Flowering Rush *Butomus umbellatus* L. (Fig.1). In Britain the Flowering Rush's native distribution is not considered to extend any further north than County Durham (Preston & Croft, 1997), although there is a history of its appearance as a casual in the Clyde Area and other places in Scotland (Preston, Pearman & Dines, 2002).

Fig. 1. The Flowering Rush has become well established in the Balmaha Marshes, Loch Lomond (Photograph: Norman Tait)

The Flowering Rush is an emergent aquatic which normally spreads by its underwater rhizomes, although long range dispersal may sometimes occur through floating seeds or detached rhizomatous buds. As a plant which grows best under eutrophic conditions, the enriched waters which are to be found around the mouth of the River Endrick are undoubtedly favourable to this species.

The first few plants in flower were recorded along the southern edge of the Balmaha Marshes NS 425902, Stirlingshire, in 2003 (T. Jacobs *pers comm*). Despite being grazed by cattle when the loch levels are low, its numbers have since increased significantly, with nearly 200 flowering stems counted in early August 2006. As attractive as the species is, at its current rapid rate of colonisation the Flowering Rush may prove to be a serious competitor to some of the less vigorous native aquatic plants.

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Additions to the list of Myriapoda from St Kilda

E.G.Hancock[1], J. Robinson[2] and G.B.Corbet[3]

[1] Zoology Museum, Graham Kerr Building, University of Glasgow, G12 8QQ, Glasgow, Scotland, UK
[2] Glasgow Museums, Kelvingrove, Glasgow, G3 8AG
[3] Little Dumbarnie, Upper Largo, Leven, Fife, KY8 6JG

During a short period of fieldwork in early August 2006 based on Hirta, the largest of the St Kilda archipelago, a number of myriapods were collected by EGH and JR and have been identified by GBC. These proved to include four species hitherto unrecorded. As shown in the list below, *Lithobius forficatus*, one of the commonest centipedes in the British Isles, had been found by Evans (1906). This record and others are repeated by Waterston (1981) who summarised existing knowledge of the Outer Hebrides at that time. Evans (1906) also listed *'G[eophilus] carpophagus'*, now recognised as two species and probably more likely *G. easoni*; and similarly *'Iulus britannicus'* (now *Cylindroiulus britannicus*), probably an error for *C. latestriatus.* In both these cases these are not only the more widespread species in the northwest of Britain but our own records confirm their presence in St Kilda. An expedition to Boreray, 6 km northeast of Hirta, by a group of students from the University of Durham resulted in a lot of terrestrial invertebrate records for that island (Duncan, 1981). Many of these species have yet to be discovered on Hirta, undoubtedly the result of a dedicated group of biologists spending several weeks surveying continuously. Their finding of only one species, *Lithobius forficatus*, might indicate a genuine absence of other myriapods from Boreray and a reflection of its lack of a history of permanent human settlement.

Updated species list for St Kilda

Chilopoda (centipedes)

Lithobius forficatus (Linn.). Hirta (Evans, 1906; Waterston, 1981); Boreray (Duncan, *et al.*, 1981); Village Bay, Hirta, on sea wall and in quarry, EGH & JR, 1-8.viii.2006.

Lithobius borealis Meinert. One male, An Lag, Hirta, in leaf-litter under heather; one male in thrift tussock, Glen Bay, EGH & JR, 1-8.viii.2006.

Lithobius melanops Newport. One male, An Lag, in leaf-litter under heather, EGH & JR, 1-8.viii.2006.

Lamyctes fulvicornis Meinert. Three females, quarry, EGH & JR, 1-8.viii.2006.

Geophilus easoni Arthur et al. One female in quarry, EGH & JR, 1-8.viii.2006; '*Geophilus carpophagus*', recorded on Hirta by Evans (1906), record repeated in Waterston (1981), was probably the species now known as *G. easoni,* but the true *G. carpophagus* has been recorded on sea cliffs elsewhere in Scotland.

Brachygeophilus truncorum (Bergsöe & Meinert). One male, An Lag, in leaf-litter under heather, EGH & JR, 1-8.viii.2006.

Diplopoda (millipedes)

Cylindroiulus latestriatus (Curtis). Glen Bay, in thrift tussocks and on Oiseval, EGH & JR, 1-8.viii.2006. *Iulus britannicus* Verh., recorded by Evans (1906) and record repeated in Waterston (1981), is probably a mis-identification for *C. latestriatus.*

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Bream (*Abramis brama*), a new fish species confirmed in Loch Lomond

E. C. Etheridge & C. E. Adams

Scottish Centre for Ecology and the Natural Environment, Division of Environmental and Evolutionary Biology, University of Glasgow, Rowardennan, Glasgow, G63 0AW
E-mail: e.etheridge.1@research.gla.ac.uk

Loch Lomond is of national importance. Its range of habitats, diversity of species and rare populations of powan (*Coregonus lavaretus*) and freshwater feeding river lampreys (*Lampetra fluviatilis*) warrant high conservation status (Lyle & Maitland, 1994; Maitland et al, 2000). It is also of value for tourism, including sport fisheries for migratory trout (*Salmo trutta*), salmon (*Salmo salar*) and pike (*Esox lucius*), bringing money to the area.

Historical records demonstrate that the species composition of the fish community has remained stable over a very long period, until recently, when a series of introductions of fish species new to the catchment has resulted in successful colonisation by a number of species (Maitland, 1972; Adams, 1994; Maitland *et al*, 2000). Invasive species currently found in Loch Lomond include dace (*Leuciscus leuciscus*), chub (*Leuciscus cephalus*) (Adams *et al*, 1990), crucian carp (*Carassius carassius*) (Adams & Mitchell, 1992), gudgeon (*Gobio gobio*) (Maitland *et al*, 2000) and ruffe (*Gymnocephalus cernuus*) (Winfield et al, 1996; Adams & Maitland, 1998). Invasive species can result in fundamental changes in the ecosystem; in Loch Lomond changes have occurred in prey taken by predatory species such as pike (Adams, 1991), heron (*Ardea cinerea*) (Adams & Mitchell, 1995) and otters (*Lutra lutra*) (McCafferty, 2005). Once an invasive fish species has colonised a large lake like Loch Lomond, it is essentially impossible to remove.

On the 17th January 2006 during a gill netting survey, a single bream (*Abramis brama*) was caught in the south-west of Loch Lomond near the entrance to the River Fruin (NS 364 855). The bream was 472 mm fork length and weighed 1693.4g. Scale reading indicated that the fish was 9 years old.

Bream has never been confirmed within Loch Lomond although its presence has been strongly suspected. There has been a report of a specimen caught in the River Endrick (Maitland *et al*, 2000), and a report of a roach (*Rutilus rutilus*) X bream hybrid (Adams & Maitland, 1991). It is unknown whether this fish had been a lifelong resident in Loch Lomond, or whether it was introduced as an adult to either the loch or a tributary. The capture of this new invasive species in Loch Lomond highlights the problems with unchecked